4.10 NOISE

4.10.1 INTRODUCTION

The Noise chapter of the EIR describes the existing noise environment in the project vicinity, and identifies potential impacts and mitigation measures related to noise and vibration associated with construction and operation of the Proposed Project and Biological Resources Preservation Alternative (BRPA). The methods by which the potential impacts are analyzed are discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant noise and vibration impacts to less-than-significant levels, if required. The Noise chapter is primarily based on the Environmental Noise Assessment (Noise Assessment) prepared for the Proposed Project (see Appendix P of this EIR)[1] and the Supplemental Noise Analysis prepared for the BRPA (see Appendix Q of this EIR)[2] by Saxelby Acoustics (Saxelby), as well as the City of Davis General Plan.[3]

4.10.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

Fundamentals of Acoustics

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected, or undesired, and therefore, may be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

The decibel scale was devised to measure sound. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0.0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in dB correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. A strong correlation exists between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For such reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

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1 Saxelby Acoustics, LLC. *Environmental Noise Assessment, Village Farms EIR*. November 21, 2024.
2 Saxelby Acoustics, LLC. *BRPA Supplemental Noise Analysis – Village Farms EIR – City of Davis, California.* October 7, 2024.
3 City of Davis. *City of Davis General Plan.* Adopted May 2001, Amended January 2007.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, day/night average level (L_{dn}), and shows very good correlation with community response to noise.

The L_{dn} is based upon the average noise level over a 24-hour day, with a +10 dBA weighing applied to noise occurring during nighttime hours (10:00 PM to 7:00 AM). The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, the noise measurement tends to disguise short-term variations in the noise environment.

The Community Noise Equivalent Level (CNEL) is defined as the 24-hour average noise level with noise occurring during evening hours (7:00 PM to 10:00 PM) weighted by +5.0 dBA, and nighttime hours weighted by +10.0 dBA. The L_{max} is defined as the highest root-mean-square (RMS) sound level measured over a given period of time. The Sound Exposure Level (SEL) is a rating, in decibels, of a discrete event, such as aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.

Table 4.10-1 below lists several examples of the noise levels associated with common situations.

Table 4.10-1
Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
N/A	110	Rock Band
Jet Fly-over at 300 meters (1,000 feet)	100	N/A
Gas Lawn Mower at 1 meter (3 feet)	90	N/A
Diesel Truck at 15 meters (50 feet), at 80 km/hr (50 mph)	80	Food Blender at 1 meter (3 feet) Garbage Disposal at 1 meter (3 feet)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 meters (100 feet)	70	Vacuum Cleaner at 3 meters (10 feet)
Commercial Area Heavy Traffic at 90 meters (300 feet)	60	Normal Speech at 1 meter (3 feet)
Quiet Urban Daytime	50	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
N/A	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Saxelby Acoustics, LLC, 2024.

Stationary sources of noise, including construction equipment, attenuate at a rate of approximately 6.0 dB per doubling of distance from the source depending on ground absorption. Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, increase the efficacy of noise attenuation that occurs by distance alone. Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate.

Surrounding Land Uses and Existing Sensitive Receptors

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise-sensitive biological species, although most jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site/BRPA site, sensitive land uses include residential uses to the west, south, and east of the project site.

Existing Ambient Noise Environment

The existing ambient noise environment in the project vicinity is primarily defined by traffic on East Covell Boulevard and Pole Line Road. The Union Pacific Railroad (UPRR) also contributes to noise at the project site/BRPA site. To quantify the existing ambient noise environment in the project vicinity, Saxelby conducted continuous (24-hour) noise level measurements at four locations on the site and a short-term noise measurement at one location on the site, as shown in Figure 4.10-1. The sound level meters were programmed to record the maximum, median, and average noise levels at each measurement location during the survey. The maximum value, denoted as L_{max}, represents the highest noise level measured. The average value, denoted as L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted as L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period. A summary of the noise level measurement survey results is provided in Table 4.10-2.

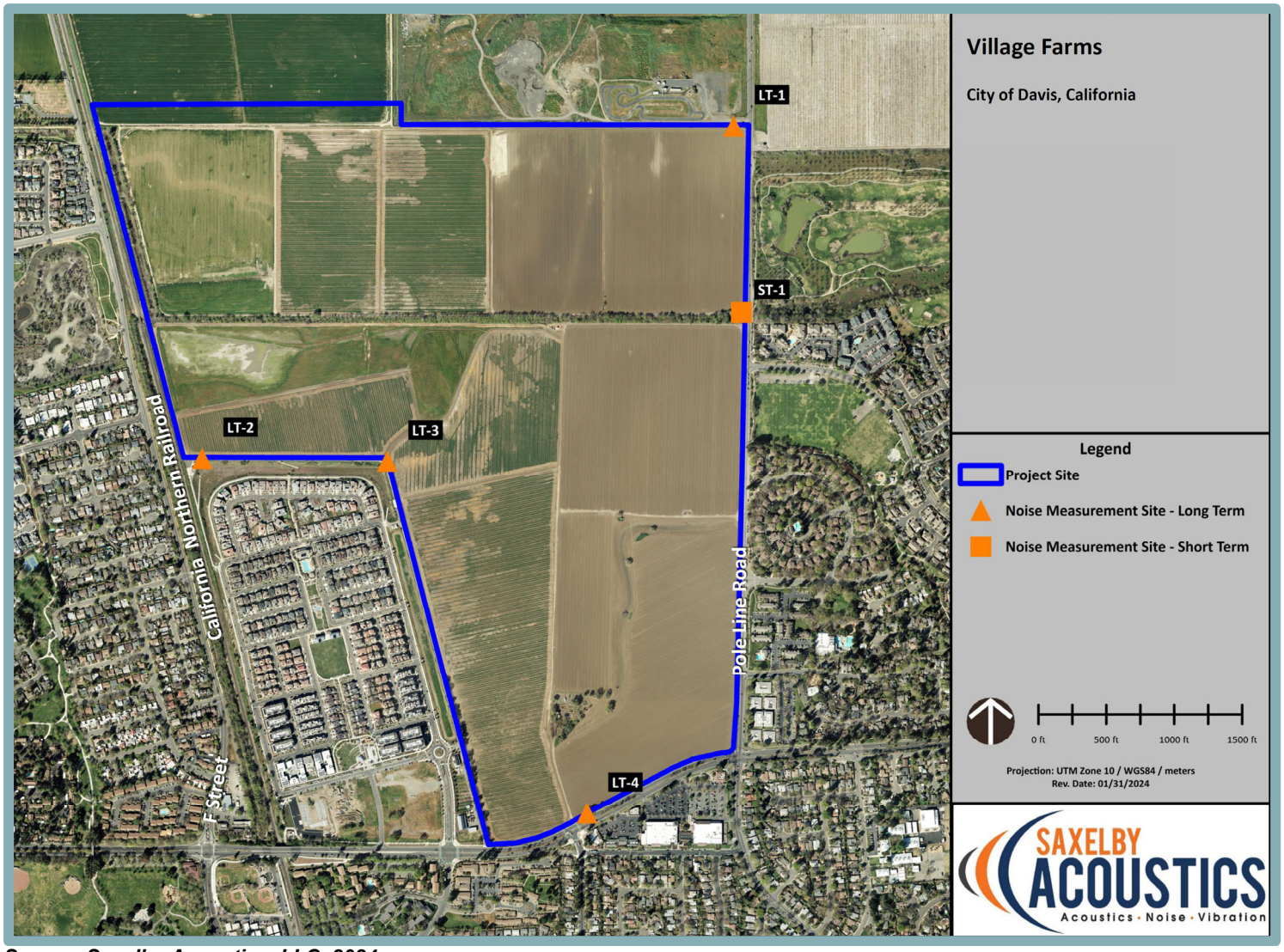
Table 4.10-2
Existing Background Noise Measurement Data

Location	Date	L_{dn}	Daytime L_{eq}	Daytime L_{50}	Daytime L_{max}	Nighttime L_{eq}	Nighttime L_{50}	Nighttime L_{max}
LT-1:	1/29/24	63	61	59	74	55	42	72
LT-2:	1/29/24	53	49	47	62	46	43	57
LT-3:	1/29/24	49	43	40	59	42	40	52
LT-4:	1/29/24	68	66	62	81	78	49	78
ST-1	1/29/24	N/A	66	62	80	N/A	N/A	N/A

Notes:
- All values are shown in dBA.
- Daytime hours: 7:00 AM to 10:00 PM.
- Nighttime hours: 10:00 PM to 7:00 AM.

Source: Saxelby Acoustics, LLC, 2024.

Figure 4.10-1
Noise Measurement Locations



Source: Saxelby Acoustics, LLC, 2024.

Existing Traffic Noise Levels

The Federal Highway Administration (FHWA) Traffic Noise Model (FHWA-RD-77-108) was used to calculate existing noise levels due to traffic, expressed in DNL, for roadways within the project vicinity. The approach used to evaluate existing traffic noise levels is discussed in the Method of Analysis section of this chapter. Traffic data for existing conditions were obtained from the transportation consultant, Fehr & Peers.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project vicinity roadway segment, as summarized in Table 4.10-3. In some locations, sensitive receptors may not receive full shielding from noise barriers or may be located at distances which vary from the assumed calculation distance.

Table 4.10-3
Existing Traffic Noise Levels

Roadway	Segment	Existing Exterior Noise Level (dBA L_{dn}) at Closest Sensitive Receptors
East Covell Boulevard	West of Market Avenue	65.9
East Covell Boulevard	East of Cannery Avenue	60.3
East Covell Boulevard	East of Pole Line Road	62.4
Cannery Loop	West of Cannery Avenue	51.1
Pole Line Road	North of Picasso Avenue	63.4
Pole Line Road	North of Donner Avenue	64.4
Pole Line Road	North of Moore Boulevard	66.9
J Street	South of East Covell Boulevard	56.5
L Street	South of East Covell Boulevard	55.8

Source: Saxelby Acoustics, LLC, 2024.

Fundamentals of Vibration

Vibration is similar to noise in that both involve a source, a transmission path, and a receiver. However, while noise is generally considered to be pressure waves transmitted through air, vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration depends on their individual sensitivity, as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second (in/sec) peak particle velocity (PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception, as well as damage to structures, have been developed for vibration in terms of PPV and RMS velocities. As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes decrease with increasing distance.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases. Operation of construction equipment and construction techniques generate ground vibration. Roadway traffic can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures

and/or cause cosmetic damage. However, traffic rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Existing Ambient Vibration Environment

Sources of substantial ground vibration do not occur in the project vicinity. The existing vibration levels within the project site/BRPA site are below the threshold of perception.

4.10.3 REGULATORY CONTEXT

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. Applicable federal laws or regulations pertaining to noise or vibration that would directly apply to the Proposed Project or BRPA do not exist. The following provides a general overview of the existing State and local regulations that are relevant to the Proposed Project or BRPA.

State Regulations

The following are the State environmental laws and policies relevant to noise and vibration.

California Building Code

The California Building Code (Title 24, Part 2 of the California Code of Regulations [CCR]) establishes uniform minimum noise insulation performance standards to protect persons within new buildings that house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources cannot exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also requires that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the allowable interior noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

The following are the local environmental goals and policies relevant to noise and vibration.

City of Davis General Plan

The following goals and policies from the City's General Plan related to noise and vibration are applicable to the Proposed Project and BRPA.

Noise Chapter

Goal NOISE 1 Maintain community noise levels that meet health guidelines and allow for a high quality of life.

Policy NOISE 1.1 Minimize vehicular and stationary noise sources, and noise emanating from temporary activities.

Standard a The City shall strive to achieve the "normally acceptable" exterior noise levels shown in

Table 19 (see Table 4.10-4) and the target interior noise levels in Table 20 (see Table 4.10-5) in future development areas and in currently developed areas.

Table 4.10-4
Exterior Noise Level Standards

Land Use Category	Community Noise Exposure L_{dn} or CNEL, dBA			
	Normally Acceptable	Conditionally Acceptable	Unacceptable	Clearly Unacceptable
Residential	Under 60	60-70[1]	70-75	Above 75
Transient Lodging – Motels, Hotels	Under 60	65-75	75-80	Above 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	Under 60	60-70	70-80	Above 80
Auditoriums, Concert Halls, Amphitheaters	Under 50	50-70	N/A	Above 70
Sports Arenas, Outdoor Spectator Sports	N/A	Under 75	N/A	Above 75
Playgrounds, Neighborhood Parks	Under 70	N/A	70-75	Above 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Under 70	N/A	70-80	Above 80
Office Buildings, Business Commercial and Professional	Under 65	65-75	Above 75	N/A
Industrial, Manufacturing, Utilities, Agriculture	Under 65	70-80	Above 80	N/A

Normally Acceptable: Specified land use is satisfactory based upon the assumption that all buildings involved are of conventional construction, without special noise insulation requirements.
Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is conducted, and needed noise attenuation features are included in the construction or development.
Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be conducted and needed noise attenuation features shall be included in the construction or development.
Clearly Unacceptable: New construction or development shall not be undertaken.
N/A: Not applicable.

[1] The City Council shall have discretion within the "conditionally acceptable" range for residential use to allow noise levels in outdoor spaces to go up to 65 dBA if cost effective or aesthetically acceptable measures are not available to reduce noise levels in outdoor spaces to the "normally acceptable" levels. Outdoor spaces which are designed for visual use only (for example, streetside landscaping in an apartment project), rather than outdoor use space, may be considered acceptable up to 70 dBA.

Source: City of Davis General Plan, Table 19, January 2007.

Table 4.10-5
Standards for Interior Noise Levels

Use	Noise Level (dBA)
Residences, Schools Through Grade 12, Hospitals and Churches	45
Offices	55

Source: City of Davis General Plan, Table 20, January 2007.

Standard b New development shall generally be allowed only in areas where exterior and interior noise levels consistent with Table 19 (see Table 4.10-4) and Table 20 (see Table 4.10-5) can be achieved.

Standard c New development and changes in use shall generally be allowed only if they will not adversely impact attainment within the community of the exterior and interior noise standards shown in Table 19 (see Table 4.10-4) and Table 20 (see Table 4.10-5). Cumulative and project specific impacts by new development on existing residential land uses shall be mitigated consistent with the standards in Table 19 (see Table 4.10-4) and Table 20 (see Table 4.10-5).

Standard d Required noise mitigation measures for new and existing housing shall be provided with the first stage and prior to completion of new developments or the completion of capacity-enhancing roadway changes wherever noise levels currently exceed or are projected within 5 years to exceed the normally acceptable exterior noise levels in Table 19 (see Table 4.10-4).

Policy NOISE 1.2 Discourage the use of sound walls whenever alternative mitigation measures are feasible, while also facilitating the construction of sound walls where desired by the neighborhood and there is no other way to reduce noise to acceptable exterior levels shown in Table 19 (see Table 4.10-4).

Standard c Review sound walls and other noise mitigations through the design review process.

Goal NOISE 2 Provide for indoor noise environments that are conducive to living and working.

Policy NOISE 2.1 Take all technically feasible steps to ensure that interior noise levels can be maintained at the levels shown in Table 20 (see Table 4.10-5).

Standard a New residential development or construction shall include noise attenuation measures necessary to achieve acceptable interior noise levels shown in Table 20 (see Table 4.10-5).

Standard b Existing areas that will be subjected to noise levels greater than the acceptable noise levels shown in Table 20 (see Table 4.10-5) as a result of increased traffic on existing city streets (including streets remaining in existing configurations and streets being widened) shall be mitigated to the acceptable levels in Table 20 (see Table 4.10-5). If traffic increases are caused by specific projects, then the City shall be the lead agency in implementing cumulative noise mitigation projects. Project applicants shall pay their fair share for any mitigation.

City of Davis Noise Ordinance

The Davis Municipal Code establishes noise level limits that are applicable to on-site project-generated noise sources that would affect existing or proposed sensitive receptors. According to Section 24.02.020 of the Davis Municipal Code, a person shall not produce, suffer, or allow to be produced on any public or private property, sounds at a level in excess of those shown below in Table 4.10-6, when measured at a property's plane or, if on any street or highway, measured at the property plane of the nearest property.

Davis Municipal Code Section 24.02.030 prohibits the production of a noise level of more than 20 dBA above the limit provided in Table 4.10-6, but not greater than 80 dBA measured at the property plane, which constitutes an absolute noise limitation. Therefore, the City's maximum noise limit is 75 dBA L_{max} for the hours of 7:00 AM to 9:00 PM and 70 dBA L_{max} during the hours of 9:00 PM to 7:00 AM.

Table 4.10-6
City of Davis Municipal Code Exterior Noise Standards

Land Use	Time Period	Maximum Noise Level (dBA)
Residential	9:00 PM to 7:00 AM	50
	7:00 AM to 9:00 PM	55
Commercial/Industrial/Core Commercial	10:00 PM to 7:00 AM	55
	7:00 AM to 10:00 PM	60
High Noise Traffic Corridor	Anytime	65

Source: Davis Municipal Code, 2024.

Additionally, Davis Municipal Code Section 24.02.040 contains special provisions which apply to noise generated by construction-related activities. The pertinent components of the section are provided below.

> (a) Power tools. The operation of power tools for noncommercial purposes shall be exempt from the provisions of Sections 24.02.020(a), (b), (c) and 24.02.030, between the hours of 8:00 a.m. and 8:00 p.m.; provided, that such operations shall be subject to the provisions of Section 24.05.010. For purposes of this section, a noncommercial use shall be a use for which a business license is not required pursuant to Chapter 19.
> (b) Construction and landscape maintenance equipment. Notwithstanding any other provision of this chapter, between the hours of 7:00 a.m. and 7:00 p.m. on Mondays through Fridays, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays, construction, alteration, repair or maintenance activities which are authorized by valid city permit or business license, or carried out by employees of contractors of the city shall be allowed if they meet at least one of the following noise limitations:
> (1) No individual piece of equipment shall produce a noise level exceeding eighty-three dBA at a distance of twenty-five feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to twenty feet from the equipment as possible.
> (2) The noise level at any point outside of the property plane of the project shall not exceed eighty-six dBA.
> (3) The provisions of subdivisions (1) and (2) of this subsection shall not be applicable to impact tools and equipment; provided, that such impact tools and equipment shall have intake and exhaust mufflers recommended by manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation, and that pavement breakers and jack-hammers shall also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation. In the absence of manufacturer's recommendations, the director of public works may prescribe such means of accomplishing maximum noise attenuation as he or she may determine to be in the public interest.
>
> Construction projects located more than two hundred feet from existing homes may request a special use permit to begin work at 6:00 a.m. on weekdays from June 15th until September 1st. No percussion type tools (such as ramsets or jackhammers) can be used before 7:00 a.m. The permit shall be revoked if any noise complaint is received by the police department.

4.10.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the potential impacts of the Proposed Project and BRPA related to noise and vibration. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required CEQA review. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." (*Ballona Wetlands Land Trust v. City of Los Angeles,* [2011] 201 Cal.App.4th 455, 473 [*Ballona*]). The California Supreme Court has held that "CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate is an analysis of how a project might exacerbate

existing environmental hazards." (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* [2015] 62 Cal.4th 369, 392; see also *Mission Bay Alliance v. Office of Community Investment & Infrastructure* [2016] 6 Cal.App.5th 160, 197 ["identifying the effects on the project and its users of locating the project in a particular environmental setting is neither consistent with CEQA's legislative purpose nor required by the CEQA statutes"], quoting *Ballona*, *supra*, 201 Cal.App.4th at p. 474). Therefore, for the purposes of the CEQA analysis, the relevant inquiry is not whether the future residents of the Proposed Project or BRPA will be exposed to pre-existing environmental noise-related hazards, but instead whether project-generated noise would exacerbate the pre-existing conditions.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to noise is considered significant if the proposed project would result in any of the following:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels (see Chapter 5, Effects Not Found to be Significant).

As noted above, issues related to whether the Proposed Project or BRPA would result in the following impact are discussed in Chapter 5, Effects Not Found to be Significant, of this EIR:

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

Summary of Applicable Noise Standards

Applicable noise level standards from the City's General Plan and the City of Davis Municipal Code are summarized below.

Construction Noise Criteria

Pursuant to Davis Municipal Code Section 24.02.040, sound or noise emanating from construction activities is exempt from the City's noise regulations, provided that construction occurs between the hours of 7:00 AM to 7:00 PM on Monday through Friday and between the hours of 8:00 AM to 8:00 PM on Saturdays and Sundays, as well as meets at least one of the following noise limitations:

- None of the construction equipment generates noise levels exceeding 83 dBA at a distance of 25 feet;
- The noise level at any point outside of the property plane of the construction site does not exceed 86 dBA;
- The construction tools are impact tools and/or equipment that have manufacturer-recommended intake and exhaust mufflers and are approved by the Director of Public Works/Director of Community Development as having the best-accomplishing noise

attenuation. Pavement breakers and jack hammers must also be equipped with acoustically attenuating shields or shrouds recommended by manufacturers and approved by the Director of Public Works/Director of Community Development as having the best-accomplishing noise attenuation;

- Individual powered blowers do not produce a noise level exceeding 70 dBA measured at a distance of 50 feet;
    - On a single-family residential property, the 70 dBA at 50 feet restriction does not apply, if operated for less than 10 minutes per occurrence; and
- Powered blowers are not simultaneously operated within a 100-foot radius of another powered blower.

The City has not adopted any formal standard for evaluating temporary construction noise which occurs within allowable hours. For short-term noise associated with project construction, the City has elected to use an increase criteria of 5.0 dBA, applied to existing residential receptors in the project vicinity.

Transportation Source Noise Criteria

The City of Davis does not have a specific threshold for evaluating noise increases due to transportation sources. Therefore, the Federal Interagency Committee on Noise (FICON) substantial increase criteria, discussed further below, is used to evaluate impacts related to traffic noise.

The following table was developed by FICON as a means of developing thresholds for identifying project-related noise-level increases. The rationale for the graduated scales is that test subjects' reactions to increases in noise levels varied depending on the starting level of noise. Specifically, with lower ambient noise environments, such as those below 60 dB L_{dn}, a larger increase in noise levels was required to achieve a negative reaction than was necessary in environments where noise levels were already elevated. Therefore, because the City does not have defined thresholds for what would be considered a substantial increase in traffic noise levels, information from Table 4.10-7 is used.

Table 4.10-7
Significance of Changes in Cumulative Noise Exposure (dB DNL)

Ambient Noise Level Without Project	Increase Required for Significant Impact
<60	+5.0 or more
60 to 65	+3.0 or more
>65	+1.5 or more

Source: Federal Interagency Committee on Noise.

The use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State. For example, Caltrans requires a project-related traffic noise-level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise-level increases between 5.0 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a conservative approach to impact assessment for the Proposed Project and BRPA.

Non-Transportation Source Noise Criteria

Davis Municipal Code Section 24.02.020 establishes exterior noise standards at residential uses of 50 dBA L_{max} between the hours of 9:00 PM to 7:00 AM, and 55 dBA L_{max} between the hours of 7:00 AM to 9:00 PM. Section 24.02.030 establishes that the City's maximum noise limit is 75 dBA L_{max} for the hours of 7:00 AM to 9:00 PM and 70 dBA L_{max} during the hours of 9:00 PM to 7:00 AM. The City of Davis General Plan establishes a day/night average noise-level threshold of 60 dBA L_{dn} within outdoor activity areas of residential land uses.

Vibration

The City of Davis does not have specific policies or standards pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events.

Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Table 4.10-8 indicates that pursuant to Caltrans standards, the threshold for architectural damage to structures is 0.2 PPV in inches per second (in/sec PPV) and continuous vibrations of 0.1 in/sec PPV, or greater, would likely cause annoyance to sensitive receptors.

Table 4.10-8
Effects of Vibration on People and Buildings

PPV		Human Reaction	Effect on Buildings
mm/sec	in/sec		
0.15 - 0.30	0.006 - 0.019	Threshold of perception; possibility of intrusion.	Vibrations unlikely to cause damage of any type.
2.0	0.08	Vibrations readily perceptible.	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected.
2.5	0.10	Level at which continuous vibrations begin to annoy people.	Virtually no risk of "architectural" damage to normal buildings.
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations).	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage.
10 - 15	0.4 - 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage.

Source: California Department of Transportation, 2002.

Method of Analysis

Below are descriptions of the methodologies used in the Noise Assessment (see Appendix P of this EIR) to measure temporary construction noise, existing and cumulative traffic noise levels, with and without the Proposed Project/BRPA, as well as project operational noise. Further

calculations are provided in Appendix P of this EIR. In addition, a description of methods used in the Supplemental Noise Analysis prepared for the BRPA (see Appendix Q of this EIR) to identify changes to the conclusions of the original Noise Assessment is provided below.

Environmental Noise Assessment

Larson Davis Laboratories (LDL) Model 812, 820, and 831 precision integrating sound level meters were used for the ambient noise-level measurement survey. The meters were calibrated before and after use with an LDL CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

To assess noise impacts due to temporary noise, Saxelby used the FHWA Roadway Construction Model (RCNM) to predict noise levels for standard construction equipment used for roadway improvement projects. The assessment of potential significant noise effects due to construction is based on the standards and procedures described in the Federal Transit Authority (FTA) guidance manual and FHWA's RCNM. The RCNM is a noise prediction model that enables the prediction of construction noise levels for a variety of construction equipment based on a compilation of empirical data and the application of acoustical propagation formulas. The model enables the calculation of construction noise levels in more detail than manual methods, which eliminates the need to collect extensive amounts of project-specific input data. RCNM allows for the modeling of multiple pieces of construction equipment working either independently or simultaneously, the character of noise emission, and the usage factors for each piece of equipment.

Construction noise varies depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week), and the duration of the construction work. Noise sources in the RCNM database include actual noise levels and equipment usage percentages. This source data was used in this construction noise analysis.

Saxelby analyzed potential future construction noise associated with the Proposed Project using data compiled for various pieces of construction equipment at a distance of 50 feet inside the boundary of each component of the Proposed Project. Similarly, construction vibration was analyzed using data compiled for various pieces of equipment at a distance of 25, 50, and 100 feet.

To assess noise impacts due to traffic increases on the local roadway network associated with development of the Proposed Project, traffic noise levels were predicted at sensitive receptors for existing and cumulative conditions, both with and without the Proposed Project. Existing and cumulative noise levels due to traffic were calculated using the FHWA-RD-77-108 noise prediction model. The model is based upon the Calveno reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn}, the input volume was adjusted to account for the day/night distribution of traffic.

Project trip generation volumes were based upon those provided in the Transportation Impact Study (TIS) prepared for the Proposed Project by Fehr & Peers (see Appendix R of this EIR).

Truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for existing and cumulative conditions resulting from the Proposed Project are provided in terms of L_{dn}.

Traffic noise levels were predicted at sensitive receptors at the closest typical setback distance along each project-area roadway segment. In some locations, sensitive receptors may not receive full shielding from noise barriers or may be located at distances which vary from the assumed calculation distance.

To assess noise impacts due to project operational noise, Saxelby modeled the proposed stationary noise-generating components that could affect existing neighboring residential uses, including approximately three acres of land proposed for neighborhood services in the eastern portion of the project site/BRPA site. Additionally, Heritage Oak Park would be located in the southeastern corner of the site adjacent to residential uses. Village Trails Park, which would be located internally in the site, would not include intensive noise-generating components and would not be anticipated to generate notable levels of noise at adjacent uses.

Saxelby used the SoundPLAN noise-prediction model. Inputs to the model included sound power levels for the proposed amenities, existing and proposed buildings, terrain type, and locations of sensitive receptors. The predictions were made in accordance with International Organization for Standardization (ISO) Standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation.

The following is a list of assumptions used for the operational noise modeling.

- Neighborhood Services: The neighborhood services were assumed to potentially include restaurants and retail outlets. Based upon similar projects, Saxelby modeled a maximum of 650 vehicle movements for this portion of the Proposed Project. Parking lot movements are predicted to generate a SEL of 71 dBA SEL at 50 feet for passenger vehicles and 85 dBA SEL at 50 feet for heavy trucks. Additional noise sources could include mechanical equipment such as packaged heating, ventilation, and air conditioning (HVAC) units, chiller condensers, and rooftop grease vents as well as drive-thru speakers. All sources were assumed to operate at full capacity during daytime hours and at 25 percent capacity during nighttime hours. For a conservative analysis of potential noise impacts, the uses assumed herein are more noise intensive than what is currently proposed for the Neighborhood Mixed-Use component of the Proposed Project. As noted in Chapter 3, Project Description, of this EIR, proposed neighborhood services include services not currently offered in the area, such as EV charging stations, space for mobile blood drives, mobile veterinary services, offering free spaying and neutering, SPIN rideshare parking, etc., which would reasonably be anticipated to result in reduced noise levels than the levels calculated herein.

- Heritage Oak Park: Based upon the available plans, the park is anticipated to include a jungle gym play area, two half basketball courts, and a large field. The large field was assumed to accommodate a soccer field. Based upon data collected at existing parks, a jungle gym would generate levels of 55 dBA L_{eq} at a distance of 65 feet to the center, basketball courts would generate noise levels of approximately 55 dBA L_{eq} at 50 feet, and a soccer game would generate approximately 58 dBA L_eq at 200 feet to the center of the

field. All amenities were modeled as operating continuously during daytime hours. Maximum noise levels from such amenities were assumed to be up to 20 dBA higher than average levels.

Supplemental Noise Analysis

Traffic volumes associated with the BRPA were determined to increase by up to 10.9 percent in the PM peak hour, as compared to the Proposed Project. As part of the Supplemental Noise Analysis, Saxelby recalculated project traffic noise-level increases at nearby sensitive receptors using the FHWA-RD-77-108 model and similar methodology employed in the Noise Assessment.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the Proposed Project or BRPA in comparison with the baseline and standards of significance identified above.

4.10-1 Generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, even with implementation of mitigation, the impact is *significant and unavoidable*.

The following discussion includes an analysis of the potential for the Proposed Project and BRPA to generate a substantial temporary increase in ambient noise levels in excess of established standards. Because the Proposed Project and BRPA would both include development of 1,800 dwelling units, as well as neighborhood services and public, semi-public, and educational uses, the following evaluation applies to both development scenarios.

Proposed Project, Biological Resources Preservation Alternative

During construction of the Proposed Project/BRPA, heavy equipment would be used for site preparation, grading, building construction, paving, architectural coating, and utility installation, all of which would temporarily increase ambient noise levels when in use. Noise levels would vary depending on the type and operation of equipment and how well the equipment is maintained. Noise exposure at any single point outside the project site/BRPA site would also vary depending on the distance from the source. As shown below in Table 4.10-9, the loudest phases of construction on the project site would be grading and construction of the off-site utility improvements, with an average noise exposure of 89 dBA L_{eq} at 50 feet from the center of activity. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

The Davis Municipal Code makes exemptions for certain typical activities that may occur within the City. The exemptions that apply to construction are listed in Davis Municipal Code Article 24.02.040, Special Provisions. The most restrictive standard would be the requirement that construction equipment does not exceed 83 dBA at a distance of 25 feet or 86 dBA at the property plane.

Table 4.10-9
Construction Equipment Noise Levels

Equipment	Quantity	Usage (Percent)	Maximum Noise Level at 50 Feet (dBA L_{max})	Hourly Average Noise Level at 50 Feet (dBA L_{eq})
Site Preparation				
Dozer	3	40	82	83
Tractor/Loader/ Backhoe	4	40	84	86
Total	**--**	**--**	**--**	**88**
Grading				
Grader	1	40	85	81
Excavator	3	40	81	82
Tractor/Loader/ Backhoe	2	40	84	83
Scraper	2	40	84	83
Dozer	2	40	82	81
Dump Truck	2	40	76	75
Total	**--**	**--**	**--**	**89**
Building Construction				
Fork Lift	3	40	83	84
Generator	1	50	81	78
Crane	1	16	81	73
Welder/Torch	1	40	74	70
Tractor/Loader/ Backhoe	3	40	84	85
Total	**--**	**--**	**--**	**88**
Paving				
Paver	2	50	77	77
Paving Equipment	2	50	77	77
Roller	2	20	80	76
Total	**--**	**--**	**--**	**81**
Architectural Coating				
Air Compressor	1	40	79	75
Total	--	--	--	75
Linear, Drainage, Utilities, and Sub-Grade				
Air Compressor	1	40	79	75
Concrete Saw	1	20	90	83
Generator	1	20	90	83
Tractor/Loader/ Backhoe	2	40	84	83
Slurry Trenching Machine	1	50	80	77
Paving Equipment	1	50	77	74
Total	**--**	**--**	**--**	**89**

Source: Saxelby Acoustics, LLC, 2024.

Based on the noise levels shown in Table 4.10-9, construction noise levels associated with the Proposed Project and BRPA would comply with the Davis Municipal Code through the implementation of the strategies contained in the City's Noise Ordinance (see Mitigation Measure 4.10-1 below). Specifically, as a means of complying with the requirement of 83 dBA at a distance of 25 feet, the Proposed Project/BRPA would be required to employ sound-control devices on equipment, muffled exhausts on equipment, and installation of acoustic barriers around stationary equipment that block line-of-sight to the equipment.

Notwithstanding, Appendix G of the CEQA Guidelines (Section XIII, question 'a') requires a lead agency to determine if a project would result in the generation of a substantial temporary increase in ambient noise levels. In terms of determining the temporary noise increase due to project-related construction activities, as previously discussed, an impact would occur if construction activities would noticeably increase ambient noise levels by 5.0 dBA over existing ambient noise levels.

Table 4.10-10 provides the predicted noise levels at the nearest sensitive receptor to each component of the Proposed Project. As shown therein, construction of the Proposed Project/BRPA is predicted to generate noise-level increases over ambient conditions greater than 5.0 dB. To reduce the increases, Saxelby recommends the use of eight-foot-tall temporary noise barriers. As further discussed below, use of temporary sound barriers during construction would not reduce all ambient noise increases below 5.0 dB at the receptor locations.

Noise would also be generated during the construction phase by increased truck traffic on area roadways, including truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would occur only during daytime hours.

According to the Supplemental Noise Analysis, construction noise under the BRPA would be generally similar to noise-level increases anticipated during construction activities for the Proposed Project. However, as the BRPA would include preservation of the 47.1-acre Natural Habitat Area, the existing sensitive receptors located south and west of the Natural Habitat Area would experience less noise-level increases during construction.

Based on the above, worst-case, maximum noise levels associated with construction activities would result in a significant noise-level increase at the nearest sensitive receptors. Therefore, the Proposed Project and BRPA would generate a substantial temporary increase in ambient noise levels in the project vicinity in excess of standards established in the Davis General Plan or Noise Ordinance, or applicable standards of other agencies, and a ***significant*** impact could occur.

Mitigation Measure(s)

As discussed above, Saxelby recommends the use of eight-foot-tall temporary noise barriers in order to reduce temporary construction noise levels at the nearest residential receptors. The resulting noise levels are listed in Table 4.10-11 below.

Table 4.10-10
Construction Noise at Existing Sensitive Receptors

Project Area	Distance to Sensitive Receptors	Representative Noise Receptor	Existing Ambient (dBA L_{eq})	Construction Noise Level (dBA L_{eq})	Existing Plus Construction (dBA L_{eq})	Increase Over Ambient (dBA)	Exceeds 5.0 dB?
North Village	400	LT-2	49.2	71.1	71.2	22.0	Yes
East Village	250	LT-1	61.3	75.2	75.4	**14.1**	Yes
South Village	225	LT-3	43.3	76.1	76.1	**32.8**	Yes
Central Village	150	LT-1	61.3	79.7	79.7	**18.4**	Yes
Neighborhood Mixed-Use	150	LT-1	61.3	79.7	79.7	**18.4**	Yes
Village Trails Park	1,050	LT-3	43.3	62.8	62.8	**19.5**	Yes
"Green Acres" Educational Farm	825	LT-1	61.3	64.8	66.4	**5.1**	Yes
Pre-Kindergarten	875	LT-3	43.3	64.3	64.4	**21.0**	Yes
Parkside Village West	225	LT-3	43.3	76.1	76.1	**32.8**	Yes
Parkside Village East	185	LT-1	61.3	77.8	77.9	**16.6**	Yes
West Park	330	LT-1	61.3	72.8	73.1	**11.8**	Yes
Davis Fire Station	400	LT-4	66.3	71.1	72.4	**6.1**	Yes
Heritage Oak Park	350	LT-4	66.3	72.3	73.3	**7.0**	Yes

Source: Saxelby Acoustics, LLC, 2024.

Table 4.10-11
Construction Noise at Existing Sensitive Receptors With Temporary Barriers

Project Area	Distance to Sensitive Receptors	Representative Noise Receptor	Existing Ambient (dBA L_{eq})	Construction Noise Level (dBA L_{eq})	Existing Plus Construction (dBA L_{eq})	Increase Over Ambient (dBA)	Exceeds 5.0 dB?
North Village	400	LT-2	49.2	66.1	66.2	**17.1**	Yes
East Village	250	LT-1	61.3	70.2	70.7	**9.4**	Yes
South Village	225	LT-3	43.3	71.1	71.1	**27.8**	Yes
Central Village	150	LT-1	61.3	74.7	74.9	**13.5**	Yes
Neighborhood Mixed-Use	150	LT-1	61.3	74.7	74.9	**13.5**	Yes
Village Trails Park	1,050	LT-3	43.3	57.8	57.9	**14.6**	Yes
"Green Acres" Educational Farm	825	LT-1	61.3	59.8	63.6	2.3	No
Pre-Kindergarten	875	LT-3	43.3	59.3	59.4	**16.1**	Yes
Parkside Village West	225	LT-3	43.3	71.1	71.1	**27.8**	Yes
Parkside Village East	185	LT-1	61.3	73.1	73.1	**11.8**	Yes
West Park	330	LT-1	61.3	68.7	68.7	**7.4**	Yes
Davis Fire Station	400	LT-4	66.3	69.2	69.2	2.9	No
Heritage Oak Park	350	LT-4	66.3	69.8	69.8	3.6	No

Source: Saxelby Acoustics, LLC, 2024.

As shown in table, the temporary barriers would reduce construction noise levels associated with three construction areas to below the applicable significant increase criteria of 5.0 dBA. However, construction noise associated with the majority of construction areas would remain over the 5.0 dBA increase criteria. Therefore, although implementation of the following mitigation measure would reduce the above significant impact, the impact would remain *significant and unavoidable.*

Proposed Project, Biological Resources Preservation Alternative

4.10-1 *Prior to the approval of grading and/or building permits, the following requirements shall be noted on Improvement Pans, subject to review and approval of the City of Davis Community Development Department:*

- *The proposed project shall incorporate eight-foot-tall temporary sound barriers between the existing sensitive receptors and construction activities, as determined by a qualified acoustical consultant prior to commencement of construction (reference locations in Table 4.10-10 of the Village Farms Draft EIR). The sound barrier fencing shall consist of 0.5-inch plywood or minimum Sound Transmission Class (STC) 27 sound curtains placed to shield nearby sensitive receptors. The plywood barrier shall be free from gaps, openings, or penetrations to ensure maximum performance;*
- *Construction activities shall only take place between the hours of 7:00 AM and 7:00 PM, Monday through Friday, and 8:00 AM and 8:00 PM, on Saturday;*
- *All construction equipment powered by internal-combustion engines shall be properly muffled and maintained;*
- *Quiet construction equipment, particularly air compressors, are to be selected whenever possible;*
- *All stationary noise-generating construction equipment, such as generators or air compressors, are to be located as far as practical from existing residences. In addition, the project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest to the project site/BRPA site;*
- *Unnecessary idling of internal-combustion engines is prohibited; and*
- *The construction contractor shall, to the maximum extent practical, locate on-site equipment staging areas to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest to the project site/BRPA site during all project construction.*

4.10-2 Generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, the impact is *less than significant.*

The following discussion includes an analysis of the potential for the Proposed Project and BRPA to generate a substantial permanent increase in ambient noise levels in excess of established standards. Because the Proposed Project and BRPA would both include development of 1,800 dwelling units, as well as neighborhood services and public, semi-public, and educational uses, the following evaluation applies to both development scenarios.

Proposed Project, Biological Resources Preservation Alternative

Residential land uses do not typically generate substantial noise during operations. In addition, while the Proposed Project/BRPA would include development of a fire station, which could result in operational noise associated with sirens, the fire station would be located in the southern portion of the project site/BRPA site, adjacent to East Covell Boulevard. Thus, the fire station would have direct access to major roadways and the concentration of siren noise that would occur as engines leave the site would not be in proximity to existing residential uses. Therefore, further discussion of operational noise associated with the proposed fire station is not required, and the primary noise sources associated with the Proposed Project and BRPA would be noise associated with increased traffic volumes on the local roadway network and noise associated with the proposed neighborhood services and Heritage Oak Park. As previously discussed, Village Trails Park, which would be located internally in the project site/BRPA site, would not include intensive noise-generating components and would not be anticipated to generate notable levels of noise at existing adjacent uses. An evaluation of future traffic noise levels at existing sensitive receptors in the project vicinity, as well as operational noise levels associated with the proposed neighborhood services and Heritage Oaks Park at existing sensitive receptors, is included below.

Traffic Noise at Existing Noise-Sensitive Receptors

Based on information provided by Fehr & Peers and using the methodology described above in the Method of Analysis section, traffic noise levels under Existing and Existing Plus Proposed Project conditions were estimated as part of the Noise Assessment and are shown in Table 4.10-12. The estimated noise levels are provided in terms of L_{dn} at the outdoor-activity areas of existing sensitive receptors. The table also includes an assessment of predicted traffic noise-level increases relative to existing ambient conditions in accordance with the FICON noise-level-increase significance criteria presented in Table 4.10-7.

As shown in Table 4.10-12, the increase in traffic noise levels attributable to the Proposed Project under Existing Plus Proposed Project conditions would be below the applicable FICON increase significance criteria shown in Table 4.10-7. Therefore, the Proposed Project would not result in a substantial increase in existing traffic noise levels at existing sensitive receptors due to project-generated traffic noise.

Table 4.10-12
Predicted Existing and Existing Plus Proposed Project Traffic Noise Levels

Roadway	Segment	Predicted Exterior Noise Level at Closest Sensitive Receptors (dBA L_{dn})				Exceeds Threshold?
		Existing	Existing Plus Proposed Project	Change	Threshold of Significance	
East Covell Boulevard	West of Market Avenue	65.9	66.7	+0.8	+1.5 dB	No
East Covell Boulevard	East of Cannery Avenue	60.3	60.6	+0.3	+3.0 dB	No
East Covell Boulevard	East of Pole Line Road	62.4	63.3	+0.9	+3.0 dB	No
Cannery Loop	West of Cannery Avenue	51.1	54.2	+3.1	+5.0 dB or >60 dB	No
Pole Line Road	North of Picasso Avenue	63.4	64.6	+1.2	+3.0 dB	No
Pole Line Road	North of Donner Avenue	64.4	65.3	+0.9	+3.0 dB	No
Pole Line Road	North of Moore Boulevard	66.9	67.5	+0.6	+1.5 dB	No
J Street	South of East Covell Boulevard	56.5	58.7	+2.2	+5.0 dB or >60 dB	No
L Street	South of East Covell Boulevard	55.8	57.3	+1.5	+5.0 dB or >60 dB	No

Source: Saxelby Acoustics, LLC, 2024.

Based on information provided by the Fehr & Peers and using the same methodology described above in the Method of Analysis section, traffic noise levels under Existing and Existing Plus BRPA conditions were estimated as part of the Supplemental Noise Analysis and are shown in Table 4.10-13.

The estimated noise levels are provided in terms of L_{dn} at the outdoor-activity areas of existing sensitive receptors. The table also includes an assessment of predicted traffic noise-level increases relative to existing ambient conditions in accordance with the FICON noise-level increase significance criteria presented in Table 4.10-7.

As shown in Table 4.10-13, the increase in traffic noise levels attributable to the BRPA under Existing Plus BRPA conditions would be below the applicable FICON increase significance criteria shown in Table 4.10-7. Therefore, the BRPA would not result in a substantial increase in existing traffic noise levels at existing sensitive receptors due to project-generated traffic noise.

Operational Noise at Existing Sensitive Receptors

The Davis Municipal Code establishes maximum noise level standards of 75 dBA L_{max} during daytime hours (7:00 AM to 9:00 PM), 70 dBA L_{max} during nighttime hours (9:00 PM to 7:00 AM), and a day/night average noise-level threshold of 60 dBA L_{dn}.

Figure 4.10-2 shows the daytime L_{max} noise levels resulting from operations of the proposed neighborhood services and Heritage Oak Park. Figure 4.10-3 shows the nighttime L_{max} noise levels, and Figure 4.10-4 shows the L_{dn} noise levels. As shown by Figure 4.10-2, Figure 4.10-3, and Figure 4.10-4, development of the aforementioned uses is predicted to expose nearby residences to maximum noise levels of up to 66 dBA L_{max} during daytime hours and 60 dBA L_{max} during nighttime hours, and a day/night average noise level of 48 dBA L_{dn}. Therefore, the Proposed Project would not result in a substantial increase in operational noise levels at existing sensitive receptors due to project-generated noise associated with new neighborhood services and Heritage Oak Park.

According to the Supplemental Noise Analysis, the location of the primary operational noise-generating components of the Proposed Project, the proposed neighborhood services and Heritage Oak Park, would not be modified under the BRPA. Thus, the analysis of operational noise sources that could affect nearby sensitive receptors under the BRPA would be identical to the evaluation of the Proposed Project. Therefore, the BRPA would not result in a substantial increase in operational noise levels at existing sensitive receptors due to project-generated noise associated with new neighborhood services and Heritage Oak Park.

Conclusion

Based on the above, the Proposed Project and BRPA would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Davis General Plan or Noise Ordinance, or applicable standards of other agencies. Therefore, a ***less-than-significant*** impact would occur.

Table 4.10-13
Predicted Existing and Existing Plus BRPA Traffic Noise Levels

Roadway	Segment	Predicted Exterior Noise Level at Closest Sensitive Receptors (dBA L_{dn})				Exceeds Threshold?
		Existing	Existing Plus BRPA	Change	Threshold of Significance	
East Covell Boulevard	West of Market Avenue	65.9	66.8	+0.9	+1.5 dB	No
East Covell Boulevard	East of Cannery Avenue	60.3	60.7	+0.4	+3.0 dB	No
East Covell Boulevard	East of Pole Line Road	62.4	63.4	+1.0	+3.0 dB	No
Cannery Loop	West of Cannery Avenue	51.1	54.5	+3.4	+5.0 dB or >60 dB	No
Pole Line Road	North of Picasso Avenue	63.4	64.7	+1.3	+3.0 dB	No
Pole Line Road	North of Donner Avenue	64.4	65.4	+1.0	+3.0 dB	No
Pole Line Road	North of Moore Boulevard	66.9	67.6	+0.7	+1.5 dB	No
J Street	South of East Covell Boulevard	56.5	58.9	+2.4	+5.0 dB or >60 dB	No
L Street	South of East Covell Boulevard	55.8	57.4	+1.6	+5.0 dB or >60 dB	No

Source: Saxelby Acoustics, LLC, 2024.

Figure 4.10-2
Daytime Neighborhood Services and Heritage Oak Park Noise Levels (dBA L_{max})

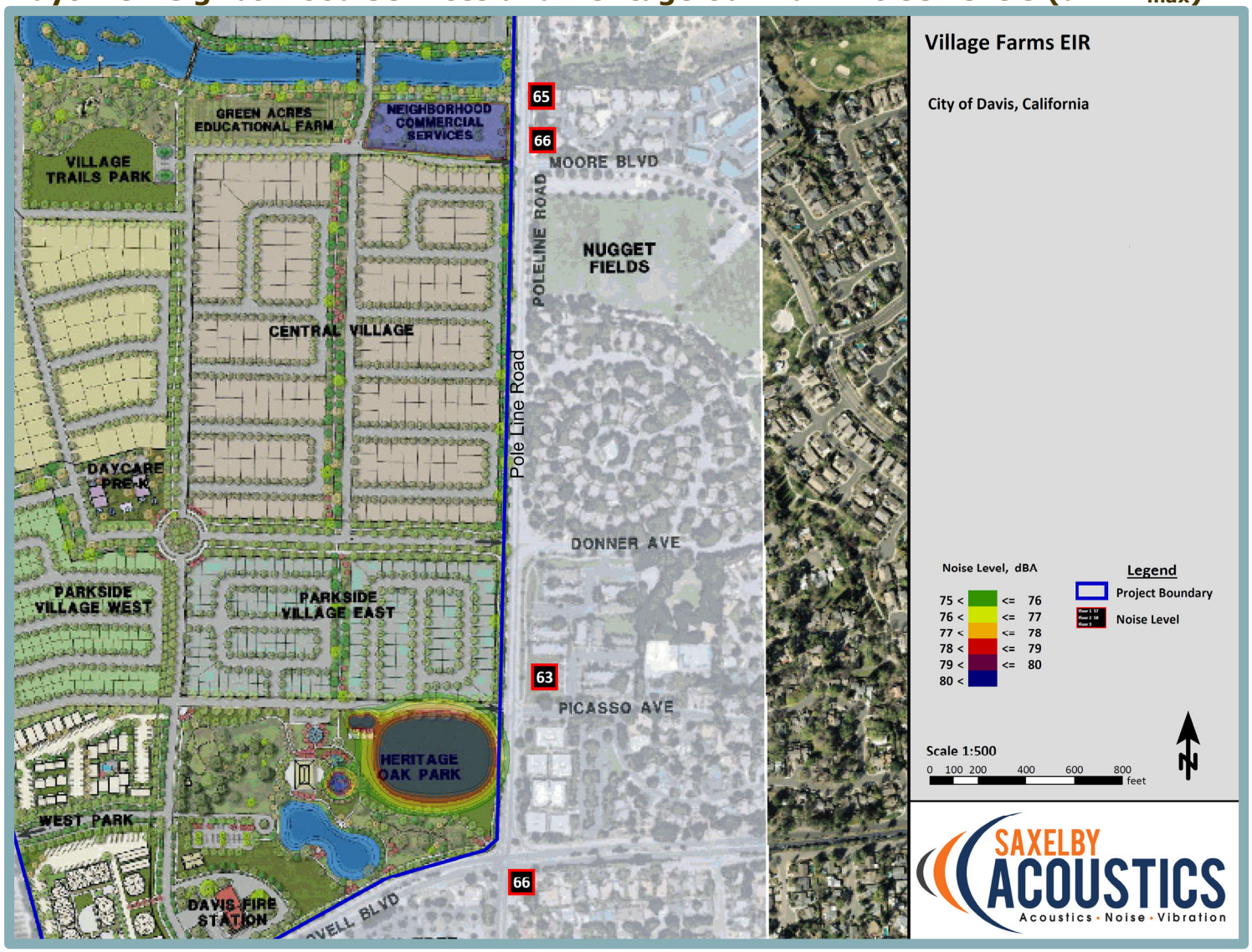


Figure 4.10-3
Nighttime Neighborhood Services and Heritage Oak Park Noise Levels (dBA L_{max})

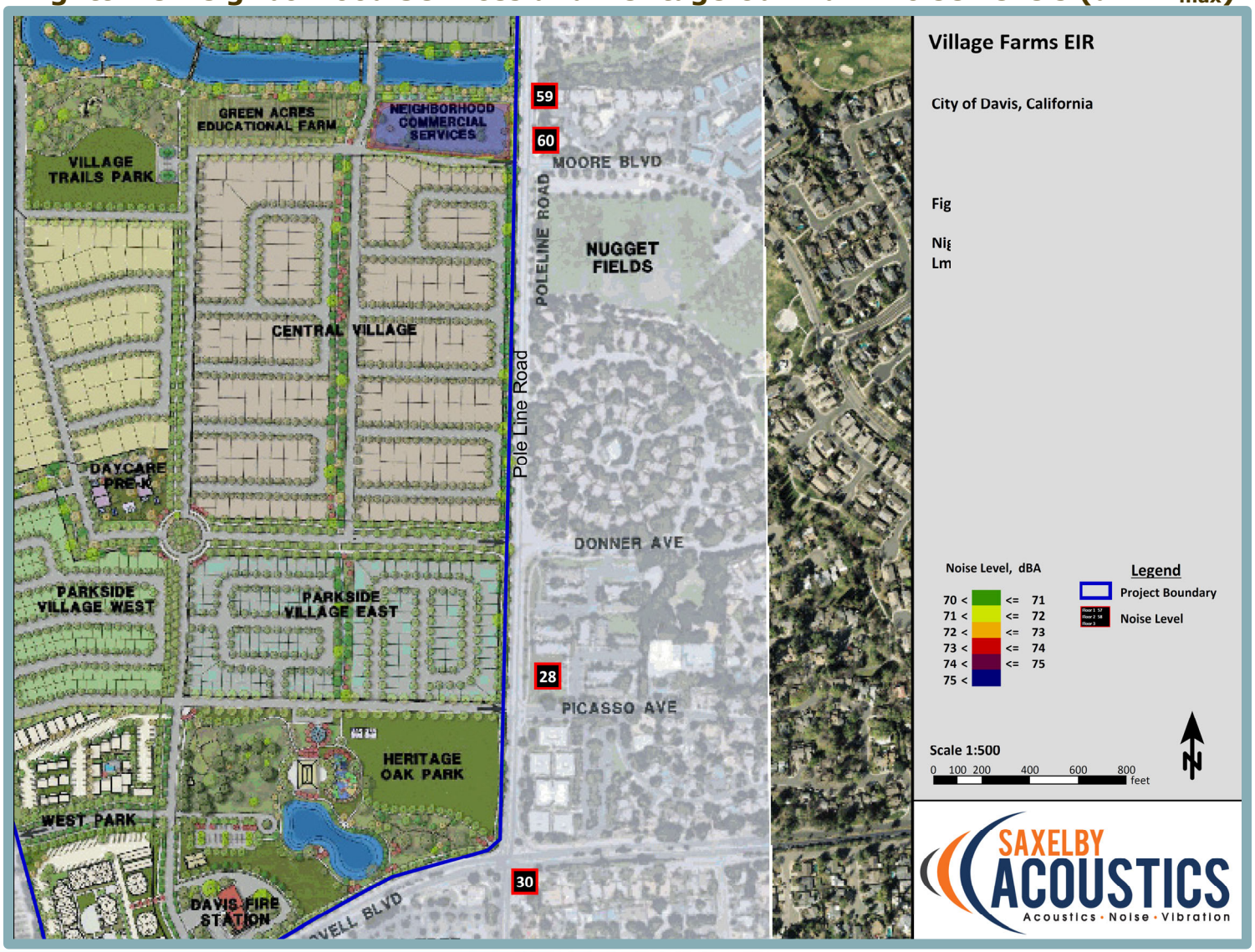
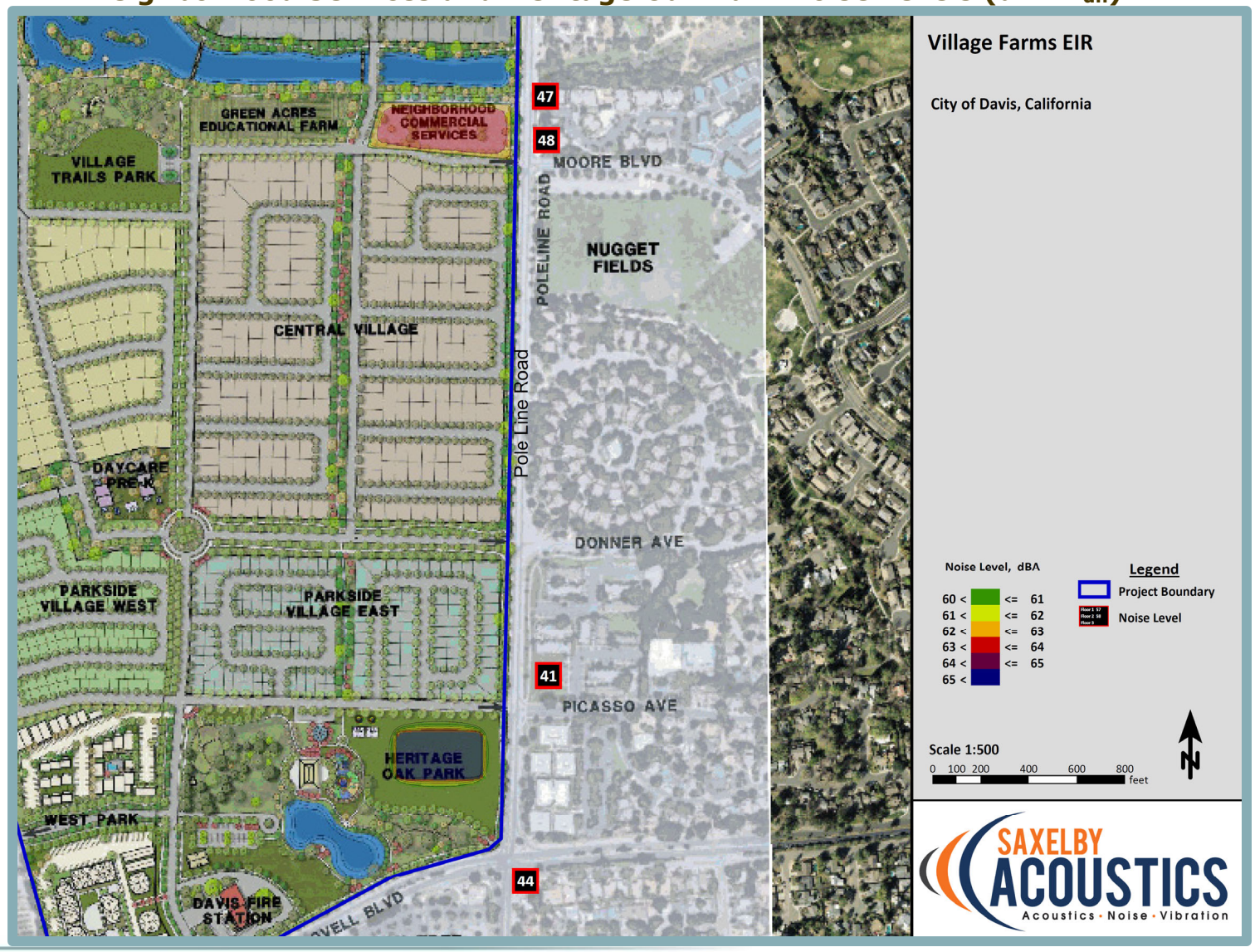


Figure 4.10-4
Neighborhood Services and Heritage Oak Park Noise Levels (dBA L_{dn})



Mitigation Measure(s)

None required.

4.10-3 Generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of the potential for the Proposed Project and BRPA to generate excessive groundborne vibration or groundborne noise levels. Because the Proposed Project and BRPA would both include development of 1,800 dwelling units, as well as neighborhood services and public, semi-public, and educational uses, the following evaluation applies to both development scenarios.

Proposed Project, Biological Resources Preservation Alternative

Development of the Proposed Project/BRPA would primarily consist of a residential community, with other uses including neighborhood services, parks, and public, semi-public, and educational uses. Such uses do not typically involve equipment that generates appreciable vibration during operational activities. Overall, operation of both the Proposed Project and BRPA would not result in the generation of excessive groundborne vibration or groundborne noise levels.

However, construction activities associated with development of the Proposed Project and BRPA would have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Construction would use typical construction equipment and would not require significant sources of vibration such as pile driving or blasting. Table 4.10-14 below shows the vibration levels produced by typical construction equipment.

Table 4.10-14
Vibration Levels for Various Construction Equipment

Type of Equipment	PPV at 25 feet (in/sec)	PPV at 50 feet (in/sec)	PPV at 100 feet (in/sec)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/Drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/Roller	0.210 (less than 0.2 at 26 feet)	0.074	0.026

Source: Saxelby Acoustics, LLC, 2024

Table 4.10-14 indicates that construction vibration levels anticipated for typical construction equipment are less than the 0.2 in/sec PPV threshold at distances of 26 feet. The nearest sensitive receptors that could be impacted by construction related vibrations, especially vibratory compactors/rollers, are residences located approximately 150 feet from the project site's/BRPA site's eastern boundary. At distances greater than 26 feet, construction vibrations are not predicted to exceed

acceptable levels. Additionally, construction activities would be temporary in nature and would occur during normal daytime working hours.

Based on the above, the Proposed Project and BRPA would not result in generation of excessive groundborne vibration or groundborne noise levels, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. For further detail related to the cumulative setting of the Proposed Project/BRPA, refer to Chapter 6, Statutorily Required Sections, of this EIR.

4.10-4 Generation of a substantial permanent increase in ambient noise levels associated with cumulative development of the Proposed Project or the BRPA in combination with future buildout of the City of Davis. Based on the analysis below, the impact is *less than significant*.

Future development projects within the City of Davis would incrementally affect the future cumulative ambient noise environment. Given the primarily residential nature of the Proposed Project/BRPA, the primary project component that could combine with noise impacts from surrounding development in the project region would be associated with vehicle traffic generated by development of the project site/BRPA site and other planned development projects, which together, could potentially result in a significant cumulative impact related to transportation noise. The following discussions include an analysis of potential increases to cumulative noise levels associated with development of the Proposed Project or BRPA, in combination with future buildout of the City of Davis.

Proposed Project

To assess the potential noise impacts due to traffic increases from the Proposed Project on the local roadway network under cumulative conditions, noise levels have been calculated for Cumulative and Cumulative Plus Proposed Project conditions at the nearest existing sensitive receptors using the methodology described in the Method of Analysis section.

Table 4.10-15 compares Cumulative No Project with Cumulative Plus Proposed Project to determine if the Proposed Project's contribution to the cumulative noise environment is considerable. As shown in the table below, noise-level increases under Cumulative Plus Proposed Project conditions would not be above the applicable threshold.

Table 4.10-15
Predicted Cumulative and Cumulative Plus Proposed Project Traffic Noise Levels

Roadway	Segment	Predicted Exterior Noise Level at Closest Sensitive Receptors (dBA L_{dn})				Exceeds Threshold?
		Cumulative	Cumulative Plus Proposed Project	Change	Threshold of Significance	
East Covell Boulevard	West of Market Avenue	66.7	67.3	+0.6	+1.5 dB	No
East Covell Boulevard	East of Cannery Avenue	61.2	61.5	+0.3	+3.0 dB	No
East Covell Boulevard	East of Pole Line Road	63.9	64.5	+0.6	+3.0 dB	No
Cannery Loop	West of Cannery Avenue	56.3	57.4	+1.1	+5.0 dB or >60 dB	No
Pole Line Road	North of Picasso Avenue	63.7	64.9	+1.2	+3.0 dB	No
Pole Line Road	North of Donner Avenue	64.8	65.6	+0.8	+3.0 dB	No
Pole Line Road	North of Moore Boulevard	67.5	68.0	+0.5	+1.5 dB	No
J Street	South of East Covell Boulevard	58.4	59.9	+1.5	+5.0 dB or >60 dB	No
L Street	South of East Covell Boulevard	57.7	58.7	+1.0	+5.0 dB or >60 dB	No

Source: Saxelby Acoustics, LLC, 2024.

Biological Resources Preservation Alternative

To assess the potential noise impacts due to traffic increases from the BRPA on the local roadway network under cumulative conditions, noise levels have been calculated for the Cumulative and Cumulative Plus BRPA conditions at the nearest existing sensitive receptors using the methodology described in the Method of Analysis section.

Table 4.10-16 compares Cumulative No Project with Cumulative Plus BRPA to determine if the BRPA's contribution to the cumulative noise environment is considerable. As shown in the table below, noise-level increases under Cumulative Plus BRPA conditions would not be above the applicable threshold.

Conclusion

Based on the above, under both Cumulative Plus Proposed Project and Cumulative Plus BRPA conditions, the Proposed Project and BRPA, respectively, would not result in a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Davis General Plan or Noise Ordinance, or applicable standards of other agencies. Therefore, a ***less-than-significant*** cumulative impact would occur.

Mitigation Measure(s)

None required.

Table 4.10-16
Predicted Cumulative and Cumulative Plus Project Traffic Noise Levels

Roadway	Segment	Predicted Exterior Noise Level at Closest Sensitive Receptors (dBA L_{dn})				Exceeds Threshold?
		Cumulative	Cumulative Plus BRPA	Change	Threshold of Significance	
East Covell Boulevard	West of Market Avenue	66.7	67.4	+0.7	+1.5 dB	No
East Covell Boulevard	East of Cannery Avenue	61.2	61.5	+0.3	+3.0 dB	No
East Covell Boulevard	East of Pole Line Road	63.9	64.6	+0.7	+3.0 dB	No
Cannery Loop	West of Cannery Avenue	56.3	57.6	+1.3	+5.0 dB or >60 dB	No
Pole Line Road	North of Picasso Avenue	63.7	65.0	+1.3	+3.0 dB	No
Pole Line Road	North of Donner Avenue	64.8	65.7	+0.9	+3.0 dB	No
Pole Line Road	North of Moore Boulevard	67.5	68.0	+0.5	+1.5 dB	No
J Street	South of East Covell Boulevard	58.4	60.0	+1.6	+5.0 dB or >60 dB	No
L Street	South of East Covell Boulevard	57.7	58.8	+1.1	+5.0 dB or >60 dB	No

Source: Saxelby Acoustics, LLC, 2024.